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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/593,707

07/13/2007

Jun Hirano

L8638.06116

3097

52989

7590

01/24/2012

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EXAMINER

ZHOU, YONG

ART UNIT

PAPER NUMBER

2477

MAIL DATE

DELIVERY MODE

01/24/2012

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/593,707	<b>Applicant(s)</b> HIRANO ET AL.	
	<b>Examiner</b> YONG ZHOU	<b>Art Unit</b> 2477	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 November 2011.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 5) ☒ Claim(s) 1,4,6-9,11-13,19,21-24,26-28,46,48 and 50 is/are pending in the application.
- 5a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☒ Claim(s) 1,4,6-9,11-13,19,21-24,26-28,46,48 and 50 is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/16/2011 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, 7, 9, 11-13, 19, 20, 22, 24, 26-28, 46, 48 and 50 are rejected under 35 U.S.C. 102(e) as being anticipated by Venkitaraman et al. (US 2003/0161287, hereinafter Venkitaraman) in view of NG et al., "Securing Nested Tunnel Optimization with Access Router Option", Internet-Draft: draft-ng-memo-access-router-option-00, October, 2002 (hereinafter Ng-ARO).

**Regarding claim 1**, Venkitaraman teaches a dynamic network management system in a communication system including a mobile access router forming a mobile network and one or more mobile nodes residing in the mobile network (Fig. 1, #110-116, [0019], lines 2-5, wherein the a mobile network comprises a mobile router attached to a local mobile network connecting one or more mobile nodes),

wherein the dynamic network management system is configured so that, after the mobile node sends first information as a part of second information which reaches a network entity outside of the mobile network, the first information requesting a global address of the mobile access router, the mobile access router receiving the first information from the mobile node informs the mobile node about the global address of the mobile access router (Fig. 11, #1102-1106, [0048], lines 1-9, [0049], lines 1-6, wherein the mobile node sends a router solicitation message (second information) including a request (first information) for information about the mobile router it is attached; in response, the mobile router informs the mobile node of the home address of the mobile router in a router advertisement message).

Venkitaraman does not expressly teach that a local fixed router residing in the mobile network forms a local network and forwards the second information sent from a mobile node participating in the local network and that the first information sent as part of the second information from the mobile nodes comprising special markings requesting global address of the mobile access router as part of an Access Router Option (ARO) solution.

Ng-ARO teaches that nodes residing in the mobile network formed by a mobile router (MR4) may include a local fixed router (LFR3) which also forms its own local network with other mobile nodes (MR2) attached ; the local mobile nodes sends packets to outside of the local network through the local fixed router (p24, Sec. 6.2, 1<sup>st</sup> paragraph, p25, 1<sup>st</sup> paragraph). Ng-ARO further teaches that the ARO option allows the sender to advertise its egress interface global address to nodes attached to its ingress interface(s). This allows mobile nodes to include an Access Router Option when sending Binding Updates. (p7, Secs. 2.1 and 2.2, p14, 2<sup>nd</sup> paragraph,)

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine teachings from Ng-ARO into the Venkitaraman invention to include a local fixed router that forwards packets from the local mobile nodes to the outside network and to include special indication as part of an access router option to request a global address of the access router in order to facilitate network mobility.

**Regarding claims 4 and 19**, Venkitaraman teaches a dynamic network management apparatus placed in a mobile access router which forms a mobile network (Fig. 1, #112, [0009], lines 4-9, wherein majority of the mobility management responsibility is placed in the mobile router), comprising:

a connection unit for connecting one or more mobile nodes residing in the mobile network (Fig. 1, #110-116, [0019], lines 2-5, wherein the a mobile network comprises a mobile router attached by links to one or more mobile nodes),

an information detection unit for detecting first information requesting a global address of the mobile access router, the first information being as a part of second information which reaches a network entity outside of the mobile network, the second information being sent from a mobile node (Fig. 11, #1102, [0048], lines 1-4, wherein the mobile node sends a router solicitation message (second information) including a request (first information) for information about the mobile router it is attached), and

a response information sending unit for sending response information including the global address of the mobile access router to the mobile node which has sent the first information (as a part of the second information) through the local fixed router in order to inform the mobile node of the global address of the mobile access router when the first information is detected by the information detection unit (Fig. 11, #1104-1106, [0048], lines 1-9, [0049], lines 1-6, wherein in response to the router solicitation received from the mobile node, the mobile router informs the mobile node of the home address of the mobile router in a router advertisement message).

Venkitaraman does not expressly teach that a local fixed router residing in the mobile network forms a local network and forwards the second information sent from a mobile node participating in the local network and that the first information sent as part of the second information from the mobile nodes comprising special markings requesting global address of the mobile access router as part of an Access Router Option (ARO) solution.

Ng-ARO teaches that nodes residing in the mobile network formed by a mobile router (MR4) may include a local fixed router (LFR3) which also forms its own local

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network with other mobile nodes (MR2) attached ; the local mobile nodes sends packets to outside of the local network through the local fixed router (p24, Sec. 6.2, 1<sup>st</sup> paragraph, p25, 1<sup>st</sup> paragraph). Ng-ARO further teaches that the ARO option allows the sender to advertise its egress interface global address to nodes attached to its ingress interface(s). This allows mobile nodes to include an Access Router Option when sending Binding Updates. (p7, Secs. 2.1 and 2.2, p14, 2<sup>nd</sup> paragraph,)

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine teachings from Ng-ARO into the Venkitaraman invention to include a local fixed router that forwards packets from the local mobile nodes to the outside network and to include special indication as part of an access router option to request a global address of the access router in order to facilitate network mobility.

**Regarding claims 9 and 24,** Venkitaraman teaches a dynamic network management apparatus placed in a mobile node which participates in a mobile network being formed by a mobile access router (Fig. 1 #110-116, [0009], lines 4-13, wherein the mobility management responsibility is placed in the mobile node attached in a mobile network formed by a mobile router), comprising:

a connection unit for connecting a router it is attached to (Fig. 1, #110-116, [0019], lines 2-5, wherein the a mobile network comprises a mobile router attached by links to one or more mobile nodes),

a sending unit for sending first information as a part of second information which reaches a network entity outside of the mobile network, the first information requesting a

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global address of the mobile access router when the mobile node does not know the global address of the mobile access router, wherein the second information is to be forwarded by the certain router connected to the mobile access router (Fig. 1, #112-116, Fig. 11, #1102, [0027], lines 1-14, [0048], lines 1-4, wherein the mobile node does not know its location and sends a router solicitation message to the mobile router via the network links; the router solicitation message (second information) includes a request (first information) for information about the mobile router it is attached), and

a response information receiving unit for receiving response information including the global address of the mobile access router sent from the mobile access router as a response to the first information which is a part of the second information sent by the sending unit (Fig. 11, #1104-1106, [0048], lines 1-9, [0049], lines 1-6, wherein the mobile node receives the home address of the mobile router which is sent by the mobile router in response to the router solicitation received from the mobile node).

Venkitaraman does not expressly teach that a local fixed router residing in the mobile network forms a local network and forwards the second information sent from a mobile node participating in the local network and that the first information sent as part of the second information from the mobile nodes comprising special markings requesting global address of the mobile access router as part of an Access Router Option (ARO) solution.

Ng-ARO teaches that nodes residing in the mobile network formed by a mobile router (MR4) may include a local fixed router (LFR3) which also forms its own local network with other mobile nodes (MR2) attached ; the local mobile nodes sends packets

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to outside of the local network through the local fixed router (p24, Sec. 6.2, 1<sup>st</sup> paragraph, p25, 1<sup>st</sup> paragraph). Ng-ARO further teaches that the ARO option allows the sender to advertise its egress interface global address to nodes attached to its ingress interface(s). This allows mobile nodes to include an Access Router Option when sending Binding Updates. (p7, Secs. 2.1 and 2.2, p14, 2<sup>nd</sup> paragraph,)

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine teachings from Ng-ARO into the Venkitaraman invention to include a local fixed router that forwards packets from the local mobile nodes to the outside network and to include special indication as part of an access router option to request a global address of the access router in order to facilitate network mobility.

**Regarding claims 7 and 22**, Venkitaraman further teaches a forwarding unit for forwarding a packet with the first information to a predetermined destination set in the packet (Figs. 5 & 7, #112, #116, [0036], lines 10-15, [0041], lines 8-10).

**Regarding claims 11 and 26**, the combination of Venkitaraman and Ng-ARO teaches the limitations of claims 9 and 24.

Venkitaraman further teaches an information embedding unit for embedding the first information in a packet header of a Binding Update message, the Binding Update message being addressed to a predetermined communication apparatus which is different from the mobile access router, and configured so that the sending unit sends a packet including the Binding Update message which the information is embedded by

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the information embedding unit ([0006], lines 6-10, [0029], lines 1-7, [0045], lines 12-15, wherein the mobile node sends the mobile router a Binding Update message destined to its home agent (or a correspondent node), which is different from the mobile router, and the Binding Updating message includes binding information).

Venkitaraman does not expressly teach embedding the first information in the packet header of a Binding Update message.

Ng-ARO teaches the BU message contains an ARO option which specifies the global address of the mobile router (Sec. 2.2, 1<sup>st</sup> paragraph).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Venkitaraman invention with teachings from Ng-ARO to embed address information in the header of the binding update message to facilitate the delivery of the BU information.

**Regarding claims 12 and 27**, Venkitaraman further teaches that the dynamic network management apparatus is configured so that the sending unit sends information indicating that an access router option can be used in parallel with sending the first information ([0022], lines 1-15, [0029], lines 1-11, [0045], lines 12-15, wherein the mobile node may obtain any number of care of addresses and updates its home agent and correspondent nodes home address of its attached mobile router; upon receiving packets destined for an attached mobile network, sends binding updates to the correspondent nodes in parallel identifying its location).

**Regarding claims 13 and 28**, Venkitaraman further teaches a packet creating unit for creating a special packet representing the first information, and being configured

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so that the sending unit sends the special packet created by the packet creating unit ([0027], lines 1-7, wherein the mobile node creates and sends binding update message to correspondent nodes identifying its point of attachment).

**Regarding claim 46**, Venkitaraman further teaches that the mobile access router looks for the first information comprising the special markings requesting the global address of the mobile access router by scanning a packet, the packet being sent from a certain node participating in the mobile network, and the packet being addressed to a predetermined communication apparatus which is different from the mobile access router (Fig. 11, #1102-1106, [0048], lines 1-9, [0049], lines 1-6, wherein the mobile node sends a router solicitation message asking for information about the mobile router it is attached; upon detecting the router solicitation message sent from the mobile node, the mobile router informs the mobile node of the home address of the mobile router in a router advertisement message. The router solicitation message comprises a request for soliciting information about the mobile router it is attached).

**Regarding claims 48 and 50**, Venkitaraman further teaches that the information detection unit comprises a packet scanning unit for scanning a packet, the packet being sent from a certain node participating in the mobile network, and the packet being addressed to a predetermined communication apparatus which is different from the mobile access router, and wherein the information detection unit detects the first information comprising the special markings requesting the global address of the mobile access router by scanning the packet (Fig. 11, #1102-1106, [0048], lines 1-9, [0049], lines 1-6, wherein the mobile node sends a router solicitation message asking for

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information about the mobile router it is attached; upon detecting the router solicitation message sent from the mobile node, the mobile router informs the mobile node of the home address of the mobile router in a router advertisement message. The router solicitation message comprises a request for soliciting information about the mobile router it is attached).

4. Claims 6 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Venkitaraman in view of Ng-ARO and Korus et al. (US 6,721,297, hereinafter Korus).

**Regarding claims 6 and 21**, the combination of Venkitaraman and Ng-ARO teaches that limitations of claims 4 and 19, respectively, but fails to teach an information deleting unit for deleting the first information from a packet with the first information when the first information is detected by the information detection unit, and a forwarding unit for forwarding the packet which the first information has been deleted by the information deleting unit to a predetermined destination set in the packet.

Korus teaches that the mobile router replaces the IP destination identified in the router header extension and removes the router header before forwarding the packets to the mobile network hosts (col. 9, lines 12-17).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Venkitaraman invention with teachings from Korus to enable removing of information from a packet before forwarding to ensure appropriate routing of the packets.

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5. Claims 8 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Venkitaraman in view of Ng-ARO and Watanabe et al. (US 7,020,440, hereinafter Watanabe).

**Regarding claims 8 and 23**, the combination of Venkitaraman and Ng-ARO teaches that limitations of claims 4 and 19, respectively, but fails to teach a dropping unit for dropping a packet with the first information.

Watanabe teaches that without any support, the access router or foreign agent in the subnet X drops the packet which is destined to the mobile terminal with an invalid IP address (col. 1, lines 30-37).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Venkitaraman invention with teachings from Watanabe to drop a packet with the invalid information to ensure proper packet delivery.

### ***Response to Arguments***

6. Applicant's arguments filed 11/16/2011 have been fully considered but are moot in view of the new ground(s) of rejection.

See more details above.

### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to YONG ZHOU whose telephone number is (571)270-

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3451. The examiner can normally be reached on Monday - Friday 8:00am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chirag G. Shah can be reached on 571-272-3144. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Yong Zhou/  
Primary Examiner, Art Unit 2477